

How to grow cacti and other succulent plants

By [Yann Cochard](#).

French version here: [Culture des cactus, plantes grasses et succulentes](#)

Cacti and other succulent plants are easy to grow; the main problem is that you have to “forget” all you think you know about their cultivation. For instance, they need a lot of water in summer and cold in winter. Below is some advice for you to learn more. Just some basic rules are to be followed:

- [Watering](#)
- [Winter rest](#)
- [Light](#)

The following points are less important, but not to be neglected either:

- [Soil](#)
- [Pots and repotting](#)
- [Reproduction](#)
- [Pests](#)
- [Fertilizers](#)

Note: the information presented here does not suit all cacti, but a major portion of them. Moreover, it has to be adapted to your local climate.

For information: I've grown my plant under different climates: several years under the Breton climate, 2 years in Paris on a balcony, 6 years in Grasse (South of France) on a balcony exposed south-south-east. They were protected against rain, but not against frost. They are now in a greenhouse in the middle of France, kept at a minimum of 4° C. My collection is medium sized: I have about 400-500 plants. Collections counting several thousands of plants are frequently seen.

Watering

Contrarily to set ideas, cacti need water. They can do without for long times, but if you want to see them grow and flower, you have to water them, but not in a slapdash manner. The points to be respected are:

- The soil should be allowed to dry out between two waterings.
- Watering means give a lot of water: all the soils should be **completely** wet.
- The water should drain rapidly; the pan should not remain in a pool of water (so no saucers under the pans!)

From time to time, you can give fertilizer, once a month for instance, and maximum one watering out of three. You can use fertilizer made for geraniums; the NPK dosage is suitable for most cacti and you can easily find it in any shop. Watering is not to be done all around the year, see the following paragraph : winter rest.

Winter Rest

Prevent a human being from sleeping and he will die. It is the same for cacti. These plants need a winter rest. But what is that? That means keeping the cacti cold and dry during the winter. You're right, that may seem sadistic, but it is necessary so that in summer, they grow normally and produce flowers. In practice, waterings are to be stopped between September and April, or between November and March, according to the climate you live in.

Temperature: between 5 and 10° C if the soil is completely dry. Frost is to be avoided, although some cacti can resist up to -20° C! For some species, like Melocactus for instance, temperatures below 10° C are to be avoided. As my plants are not protected against frost, I limited the kind of species I grow.

From 0 to 4° C:

Aporocactus, Ariocarpus, Astrophytum, Aylostera, Aztekium, Bergerocactus, Blossfeldia, Browningia, Cereus, Copiapoa, Coryphantha, Echinocereus, Echinopsis, Epiphyllum, Eriocactus, Espostoa, Ferocactus, Frailea, Lobivia, Lophophora, Maihuenia, Mediobolivia, Mammillaria, Neolloydia, Notocactus, Obregonia, Opuntia, Oreocereus, Parodia, Pediocactus, Phyllocactus, Rebutia, Sclerocactus, Strombocactus, Sulcorebutia, Tephrocactus, Thrixanthocereus, Turbinicarpus, Vitricania, Weingartia, Wigginsia

From 4 to 10° C:

Akersia, Armatocereus, Bolivocereus, Borzicactus, Brasilicactus, Brasiliparodia, Cephalocereus, Cleistocactus, Clistanthocereus, Coleocephalocereus, Echinocactus, Stenocactus, Haageocereus, Hatiora, Neobuxbaumia, Ortegocactus, Pachycereus, Pereskia, Rhipsalis, Schlumbergera, Selenicereus, Seticereus, Setiechinopsis, Stenocactus, Thelocactus, Trichocereus, Uebelmannia

From 10 to 15° C:

Arrojadoa, Astrophytum asterias, Discocactus, Melocactus, Pilosocereus



Cactus under snow

Light

A subject not often discussed, but in my opinion, light is one of the most important factors. Remember that most cacti come from Mexico, a very sunny country. Even if they grow in the shade of herbs or bushes, they receive more light than being in full sun in France!

However, I would not advise to place them in full sun; better would be “filtered” sunlight. Why? Simply because in France, the difference between winter sun and summer sun is too great and therefore, the plants risk being “burnt” by the first sunbeams. When the plants do not receive enough light, they will etiolate and become pale green. Light is the main factor for nice spine development.

Conclusion: maximum light, but no direct sun.

Soil

This is a delicate matter, because each cacti enthusiast has his own mixture(s). In general, we know that cacti live in very poor soil, poor in the meaning of contents of organic material. The soil should allow the roots to breath and the water to pour out easily. Personally, I started with the so-said mixture 3/3 earth-compost-sand. The sand has to have big grains, i.e. 2 to 5 mm. The compost has to be entirely decomposed. For some time, I avoided the earth because it gets hard quite rapidly. I now use lighter materials as “pouzzolane” (volcanic origin) or “perlite”. It is said that peat can be used instead of earth, but I did not try that. The quality of your compost or peat is of primary importance, because these materials often are a source of trouble such as root meales. If it is possible to do so, you can sterilize it by passing it in a microwave. To learn more about soil matter, you may read this article:

- [Le substrat et ses éléments](#) (The soil and its elements, in French)

Pots and repotting

Pots: mainly, 2 kinds of pots are available: terracotta or plastic. In general, it's a matter of personal taste. Before the existence of plastic pots, metal cans were rather appreciated, but now they are rarely seen. How to chose pots and pans? Here are some points to make a selection:

- Esthetic look: In general, terracotta pots are preferred.
- Evaporation: Terracotta pots dry quicker because they are porous.
- Weight: Plastic is much lighter, therefore preferable for transport. For ceroids or other high plants, terracotta pots offer more stability.
- Costs: Terracotta is more expensive.
- Repotting: Terracotta pots may make the roots stick closer to the pot.

There is no final correct answer. I use both kinds of pots and pans, preferring terracotta for bigger plants. To read more about this matter, see the article:

- [Les pots](#) (in French)

Repotting: the plants are to be potted on for 2 main raisons. The first one, most evident, is because the plant grows bigger and its roots need more space. The second one, less known, is that the soil “ages”. In nature, lots of beasts attend to the “revival” of the soil, but they are not present in our

collections. So, from time to time, even if the plant does not grow bigger, it needs fresh soil. Moreover, the repotting allows us to do a “check-up” of our plants, including the presence of pests, offsets being born, general health, etc. Also, I seize the opportunity to measure them. I am not going to teach you how to repot a plant, but there are some basic rules to be respected. The old soil has to be taken off as much as possible, taking care not to damage the roots too much. Then you can choose the size of the new pot, unless the plant can remain in the former one. In order to assure correct draining, I put a layer of big sized sand on the bottom of the pot, or even pebbles for the big plants. This is followed by the soil mixture and the plant, and then finally another layer of big sized sand or gravel (omit comma) for 3 reasons. 1: avoid moisture around the collar of the plant, the sensible part. 2: avoid digging holes by watering. 3: it gives a nicer view. Once the repotting done, I wait for a week or two before watering so that possible damaged roots have time to heal.

Frequency of repotting: All depends on how fast you want the plants to grow. I discussed the matter with some professionals and most of them repot their plants every year (omit comma) in order to have a faster and stronger growth. For older plants, it is possible to reduce this frequency to a potting on once every 2 or 3 years. A cactus that remains in its pot without frequent potting on will grow much slower or not at all. I have a Cleistocactus that I had not repotting for 4 or 5 years and that completely stopped growing. Then, I decided to change the pot and the soil and now, one year later, it already has 10 cm more, whereas it measured only 30 cm! Moreover a new branch appeared.

When to repot? In general, in spring is best. It is better to repot cacti at the end of their winter rest, just before they wake up. That way, they can recover from the trouble caused and will be quite ready for a new year's growth. In fact, I repot in spring and in summer, unless the plants are flowering. To read more about repotting, see the article :

- [Le rempotage](#) (Repotting, in French)

Reproduction

There are 2 possibilities to multiply cacti and other succulent plants: cuttings and sowing. Grafting also is possible to accelerate growth, but that is not quite a multiplication procedure.

Cuttings: that means to cut of a part of a plant and root it to make a new plant. It works very well for offsetting cacti (Mammillaria, Rebutia,...) because an offset can easily be cut off. When considering species with stem joints (Opuntia, Tephrocactus,...), just a cut at the joint of a stem will do. For succulent plants other than cacti, it depends upon the kind of the plant. In species with succulent leaves (Adromischus,...) one leaf can be taken off. From species with succulent stems, one of the stems can be cut off. Thus, not all plants can be multiplied by vegetative reproduction. For instance, Astrophytum, (all species), euphorbia obesa, and some ceroids, etc. If you absolutely want to multiply these plants by vegetative reproduction, you will have to cut the head off so that offsetting may occur (take care, head cutting is risky because it can lead to the death of the plant).

To multiply a plant by way of cuttings, it must be in full growth. You will need a clean, very sharp knife to take of the cutting. These have to dry for a more or less long time according to their size. A cutting of the size of an olive would need a week drying in a cool ventilated place free from sun. A mandarin or bigger sized cutting need to heal first and that can take up to several months. In case of doubt, wait longer. One of my nicest candles comes from the upper part of a head cutting that dried for over 6 months! I even was told that pads of an Opuntia rooted after having spent 7 years in a cellar!

Once your cutting is dry, you should stand it on a quite mineral soil. You can, for instance, add a same

quantity of big sized sand to your usual potting mixture. Watering is to be done very sparingly until the first roots appear. I use a large pan in which I put all the cutting made all along spring and up to the beginning of the summer. Normally, they will have rooted at the end of the summer and will be potted on at the following spring. To read more about cuttings, see the article:

- [La multiplication végétative des succulentes](#) (Vegetative reproduction of succulent plants, in French)

Sowing: First, you will have to get seeds, fresh if possible. As a matter of fact, for most species the germination rate highly depends on the seeds' freshness. You can collect the seeds on your own plants, or buy them (also see section nurseries). The best time to sow is spring. If you want to sow at another time of the year, you will need a special outfit, i.e. a small heated greenhouse. Your soil should be a quite mineral one; some even sow directly on sand. If you have various species, I would advise to use one pot per species, rather than a large pan with separators. Pay special attention to writing the plant's name on a label, but also on the pot. They are very easily mixed up and the smaller they are, the more difficult it is to identify them.

The seeds are to be spread out on the soil as equally as possible and covered with a layer of sand of the thickness of their diameter. The soils is to be kept moistened until the first seedlings appear. An easy way to achieve this is to put the pots in plastic bags. At the appearance of the first plants, good ventilation is needed and the soil should be allowed to dry out a little. Then comes the delicate part of the sowing: the watering should be enough to avoid the seedlings to dry, without rotting. Some fungicide may be added to the water so as to prevent the liquifying of the seedlings due to fungus.

The seedlings can be potted on at the next spring. Sowing produces plants of 1 to 3 cm in diameter in about 18 months, for most of the species.

To read more about the matter of sowing, see these articles:

- [Sowing in baggies](#) (in English)
- [Les semis de cactées](#) (Sowing cacti, in French)
- [Présentation d'une méthode de semis de cactées](#) (A method to propagate cactis with seeds, in French)

Pests

Various pests appreciate our plants.

The **mealy bug** prefers the aerial parts of the plants; it's the most frequently found pest. Some plants are very vulnerable; other seem to be immunized. Their presence is visible in the form of white cotton-like spots. Most often, the insect itself remains hidden, but from time to time, you can see it. It moves very slowly and looks like a small white woodlouse (up to 2 mm length). Contact insecticides are not very efficient against this bug, because it is hidden in its cotton, between the spines and the product does not reach so far. Therefore, it is recommended to use the so-called systemic insecticides. These are added to the water and enter the plant's sap circulation in order to poison the beasts.

Root mealy bugs: Just as the name says, this one attacks at root level. That's why special attention should be paid when repotting and the roots carefully inspected. I do not know whether these bugs are able to kill a plant but a treatment like above is recommended.

Red spider mite: Just because its name implies that the color is red, be aware that it can be colored green or orange in addition to red. I have never had any yet, but there are plenty of ways to get rid of them. If you have any, a quick trip to your nearest garden center will be necessary.

In general, remember that most of these beasts lay eggs that are not destroyed by insecticides. Therefore, the treatment is to be repeated 2 or 3 times every 2 weeks.

There are plenty of different insecticides that can be found in shops or at your club. Here are some of them. Don't forget to follow up the recommendations for use supplied with the product:

- Rogor 50 : dimethoate + cyclohexane.
- Bi-manège (Truffaut) : methylthiophanate + maneb, fungicide, acting by contact and systemic.
- Ultracide : methidathion.
- Peltar : Methylthiophanate + maneb.
- Anti-insect and acaricides (Truffaut) : Dilethol S, dimethoate, insecticide by contact and systemic.
- Pokon against mealy bugs in spray: very effective against shield mealy bugs.

This list is far from being complete. It is best to consult a good book containing pictures very useful to identify the enemy!

You also may read these articles:

- [Les parasites et nuisibles](#) (pests, in French)
- [Lutter contre les cochenilles \(version 2\)](#) (Fighting mealy bugs, in French)

For very precise illustrated descriptions of these beasts, have a look at the on-line zoology, on the site of INRA.

Fertilizers

Cacti can live or survive with very little feed. But if you want nice strong plants, giving some fertilizer may help.

NPK ratio: it should be similar to 1:2:3 or 1:2:4. On this point, the opinions are somewhat divided, everyone has his own formula.

Liquid fertilizer: this is the classic one, bought as a concentrate and diluted before use. Geranium or tomato fertilizer, is easy to find, and is perfectly suitable. Respect the dosage and use it at one watering out of two during the plants' growing period.

Fertilizer at slow diffusion: this kind of fertilizer is sold in granules that are to be added to the potting mixture. A well-known brand is Osmocote, who sell a special cacti formula (NPK 1:2:4, plus trace elements). Its dosage is 3 grams (= a coffee spoon) for 1 liter of soil. This kind of feed is very easy to use: just mix into the soil and that's it! It can also be used at the surface. You can find it at most of your clubs or nurseries.

Author: [Yann Cochard](#).

Translation: [Willy](#)

Updated: 2021-12-27.

License and copyright of this document

The original version of this document is available at this address:

<https://www.cactuspro.com/articles/how-to-grow-cacti-and-succulent-plants>

You are allowed to publish verbatim copies of this document on any support, at the only condition that this note is preserved.

From:

<https://www.cactuspro.com/articles/> - **Articles du Cactus Francophone**

Permanent link:

<https://www.cactuspro.com/articles/how-to-grow-cacti-and-succulent-plants>

Last update: **2021/12/27 23:02**

